

rence of one or more multinucleate cells at the base of certain young aecidia is considered, and the conclusion is reached "that they are sporophytic structures, and that they result from the stimulated growth which follows the sexual cell fusions." This is opposed to the idea (CHRISTMAN) that the "fusion cell" functions at once as a "basal cell" at the bottom of each row of spores.—J. M. C.

Gnetales and Angiosperms.—Last year ARBER and PARKIN announced¹⁴ their "strobilus theory of angiospermous descent;" and now they have applied it to the interpretation of the relationships of Gnetales.¹⁵ There is much to commend their general view, without conceding all the details cited; in fact the reviewer has long since reached the same conclusions as to the character of the strobilus of Gnetales, and has remarked upon its similarity to such inflorescences as those of the Amentiferae. The authors do not regard the Gnetales as a modern group, although at present unknown as fossils. The three survivors of this ancient group have "pro-anthostrobili,"¹⁶ evident in the staminate "flower" of *Tumboa* and reduced in the other "flowers" of the group by the suppression of one set of sporangia. To the authors the strobilus of this group is the so-called "flower;" and the strobilus of current terminology is an aggregate of strobili. Based upon this strobilus situation, the authors regard Gnetales as a phylum of gymnosperms having a common ancestry with angiosperms in the hypothetical "hemiangiosperms," and in many respects following parallel lines of development.—J. M. C.

Origin of angiosperms.—LIGNIER¹⁷ has discussed the recent paper by ARBER and PARKIN,¹⁸ in which the origin of the angiosperm flower (of the Ranales type) is traced to the bisporangiate strobilus of Bennettitales. From this view LIGNIER dissents, as he regards the strobilus in question as representing an inflorescence rather than a flower. To him the intraseminal scales are not sterile carpels or sterile lobes of carpels, but bracts in whose axils the ovuliferous stalks appear. This strobilus, therefore, is a compound one, as are the ovulate strobili of many of the Coniferales and both strobili of the Gnetales. LIGNIER agrees to the idea that the Ranales type of flower is the most primitive, but he would derive it from

¹⁴ Review in BOT. GAZETTE 44:389. 1907.

¹⁵ ARBER, E. A. NEWELL, AND PARKIN, JOHN, Studies in the evolution of the angiosperms. The relationship of the angiosperms to the Gnetales. *Annals of Botany* 22:489-515. 1908.

¹⁶ An "anthostrobilus" is an axis bearing microsporophylls and megasporophylls, with the latter above the former. A "pro-anthostrobilus" is the variety in which the pollen reaches the ovules (gymnosperm), the strobilus of Bennettitales being an example; while a "eu-anthostrobilus" is the variety in which the pollen is received by the megasporophyll (angiosperm).

¹⁷ LIGNIER, O., Le fruit des Bennettitées et l'ascendance des Angiospermes. *Bull. Soc. Bot. France* IV. 8:1-17. 1908.

¹⁸ BOT. GAZETTE 44:389. 1907.